MEASUREMENT TECHNIQUE OF REYNOLDS NUMBER USING CYLINDRICAL TUBE AND COLORED FLUID INJECTION

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ABSTRACT

In this paper we give the result of the study of several types of flow of liquid in the vertical cylindrical tube, those are divided into three kinds of flow ; laminar, transitional, and turbulent flow, depending on the Reynolds number (Re). The fluid flow in the cylindrical tube is studied by adding colored dilute liquid in the middle-top of the cylindrical such that it shows a thin track of colored fluid inside the fluid flow. The laminar, transitional or turbulent flow can be realized by controlling the faucet aperture that gives different values of Reynolds numbers. The flow is captured by the Kodak digital camera Easyshare M863 8.2 mega pixel. Reynolds numbers are obtained by measuring its volumetric flow rate divided by the cross-sectional area of the tube. The fluid flow images as indicate that a stream with a Reynolds number less than 2000 appears as a laminar flow, between 2000-4000 as a transitional stream, and above 4000 as turbulent flow.

Keywords: laminar, Reynolds number, transition, turbulent

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